Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PAPERS

IN

AGRICULTURE.

AGRICULTURE.

IT is univerſally acknowledged, that promoting the growth of trees, is very highly deſerving every approbation in the power of the Society to beſtow; and it is with great ſatisfaction they perceive, that a practice ſo conducive to the benefit of the public, is extending itſelf into thoſe parts of the kingdom, which have long been disfigured by barren and ſandy heaths. This has been eminently ſhewn in Bedfordſhire, where the flouriſhing plantations, made by Francis Moore, Eſq. at Aſpley Guiſe, of which an account is given in the firſt Volume of the Society's Tranſactions, page 129, and thoſe deſcribed in the following letters, cannot fail of being particularly beneficial, whether we conſider the plantations with reſpect to thoſe trees intended to ſtand for timber, or the underwood as ſupplying fewel to a part of the country where that neceſſary article has hitherto been at ſo high a price.

In the year 1782, the Society were informed a large plantation of wood had been made, by the Right Honourable the Earl of Upper-Oſſory, near Ampthill in Bedfordſhire; and although no application had been made to the Society for any premium offered on that ſubject, yet they judged proper to enquire into the nature and extent of thoſe improvements; and, after receiving the information contained in the following letters, preſented to the Earl of Upper-Oſſory their GOLD MEDAL, as a mark of their approbation of the extenſive plantations made by his Lordſhip near Ampthill.

Ampthill, Jan. 14, 1783.

SIR,

THE 24th of December laſt, I was favoured with a letter from Mr. Small, with a requiſition to know the nature, ſize, and condition of Lord Oſſory's plantations, and to tranſmit the ſame to you.—I immediately applied to his Lordſhip for information, who ordered his park gardener to make out the account of the number of acres, &c. which I have here encloſed.

If the Society or yourſelf ſhould want any further information, and will acquaint me with it, I will, with pleaſure, obey their or your commands.

I am, Sir,

Your moſt humble Servant,

L. HUMBERSTONE.

Mr. SAMUEL MORE,
Secretary to the Society
for Encouragement of
Arts, &c.

To MR. HUMBERSTONE.

Ampthill Park, Jan. 12, 1783.

SIR,

THE different plantations of the Earl of Upper-Oſſory, that have lately been planted, conſiſt of about forty-ſix acres, and are planted with about one hundred and eighty-four thouſand trees, that is, four thouſand per acre; all of them are in a very flouriſhing condition. Some of the above are within the park, others on barren ground contiguous to it, and a few acres on one of his Lordſhip's eſtates, a few miles diſtant. The greater part are planted with Scotch Firs, mixed with Foreſt-trees of all kinds, ſuch as Oaks, Beeches, Spaniſh Cheſnuts, Hornbeam, Birch, Sycamore, Lombardy Poplar, Larches, and Spruce Firs; one plantation excepted, which was planted laſt year with forty-two thouſand Scotch Firs, and two thouſand Seedling Oaks and Spaniſh Cheſnuts. — The very wet places are planted with Aſh and Alder, with Willows of different kinds intermixed. The age of the Scotch Firs, at the time of planting, is three years; that is, one year in the ſeed-bed, and two in tranſplanted rows. The deciduous are from four to ſeven years old. There are alſo upwards of twenty acres planted, ſome years ago, with Scotch and Spruce Firs, Beech, and Spaniſh Cheſnuts. All his Lordſhip's plantations are well ſecured from cattle, and, while young, from hares and rabbits. There will be a great number planted this year; and as his Lordſhip intends planting every ſeaſon, they will ſoon be increaſed to a very large extent. As his Lordſhip's ſucceſs in planting is remarkably great, not having ten out of a thouſand die: if the Society wiſhes for any information relating either to raiſing or planting, or the growth of the different trees on the various ſoils on which they are planted, I ſhall be willing to communicate to them ſuch circumſtances as may be required.

ROBERT GIBBS.

Mr. SAMUEL MORE.

Ampthill Park, Dec. 22, 1783.

SIR,

I HOPE I ſhall be readily excuſed for not writing to you ſooner, when I acquaint you that my only motive was to make ſome further obſervations on what I had planted. As I would not willingly impoſe on any private perſon, ſo I would cautiouſly guard againſt impoſitions on a

Society intended for public good. In my laſt letter I gave ſome account of the extent of his Lordſhip's plantations, with the number of plants, and the various ſorts they were planted with. This year I have almoſt finiſhed another plantation of about fourteen acres, planted with much the ſame kinds as the former. The ſoil in general is dry, barren, ſandy, and heathy, a few acres excepted, which are loamy, and a ſmall quantity is very wet. Spaniſh Cheſnuts, Birch, Scotch Firs, Larches, and Weymouth Pines, thrive exceedingly well on the dry and barren ſand; as alſo do the Spruce Firs for a few years, as eighteen or twenty; after this time they begin to die at the top; ſo that we have been obliged to cut vaſt numbers down before they were of any ſize or uſe, other than for ſpars and rails for fencing. On the loamy ſoil they ſtill continue vigorous in their growth, and beautiful in appearance. I think the great ſucceſs I have had in planting for his Lordſhip (and I believe it will hold good in all other plantations) is the care of the plants in the ſeed-beds and nurſery-rows, to keep them clean, and not too cloſe together, to draw one another up. The Scotch Firs I plant out of the ſeed-bed, at one year old, into beds of four feet wide, and ſix or eight inches aſunder: in theſe beds they ſtand two years, which I find to be the beſt age to enſure ſucceſs; when ſmaller, the weeds are apt to injure them; when larger, they have very few fibres, and are more hurt by the winds, and longer before they ſtrike out freſh roots, and often are killed by the dry weather before they get hold of the ground. When I take them up, I ſecure as much of the earth about them as will hang; putting them carefully into whatever carriage they are conveyed in, and uſing the ſame care in laying them in their places where they are to be planted, which are holes eighteen inches diameter, putting the beſt mould about their roots. The

Spruce Fir, and the Weymouth Pine, I order in the ſame manner; with this difference only, that they will bear to ſtand longer, two, three, or four years, before they are planted out, and at that age plenty of mould will hang to their roots, which is of eſſential ſervice to plants in general. I alſo manage the deciduous trees in much the ſame manner. I have planted ſome Lombardy Poplars in a poor ſandy ſoil, which do very well, but thrive much better in a moiſt loam, on which I planted ſome about ſeventeen years ago, and they are now near ſixty feet high; but in a very wet ground I cannot get them to grow at all: whereas Aſh and Alder grow in ſuch land amazingly quick. Oaks grow very faſt among Birches and Firs, which I call nurſing-plants to them: ſome of thoſe I thus planted about ten years ago, are now ſixteen feet high. I think they will not make good timber on ſo poor a ſoil, but will produce underwood, if cut down in time; or, if they are ſuffered to remain, may anſwer ordinary purpoſes, and will ſave the better timber for extraordinary uſes. Early planting is by far the beſt for dry ſoils: I generally finiſh the greater part of both evergreen and deciduous, about the end of January.

If there is any other information wanted by the Society, that I have omitted, and is in my power to give, let me know, and I will ſend an anſwer by the return of poſt.

I am, &c.

ROBERT GIBBS.

Mr. SAMUEL MORE.

THE thanks of the Society were ordered to George Roſs, Eſq. for the following communication. He was requeſted hereafter to favour the Society with an account of the ſucceſs which may attend his plantation; and the GOLD MEDAL was preſented to him as a mark of the Society's approbation of his ſpirited attention to the planting Oaks, and other Foreſt-trees, in Scotland.

Conduit-ſtreet, May 19, 1784.

SIR,

WHEN a proper opportunity offers, you will be pleaſed to lay the encloſed certificate before the Honourable Society to which you are Secretary: it will ſhew them we are not altogether idle in the northern parts of Scotland.

About eighteen years ago, when I purchaſed the eſtate of Cromarty, ſurrounded by the famous bay of that name, I found upwards of four hundred acres of full grown Scotch Firs, and among them ſeveral Oak and other Foreſt trees, which led me to introduce Oak-plants, by cutting out the Firs, leaving a certain quantity for ſhelter to the Oaks; which fully anſwers my expectation, and will, I flatter myſelf, be followed by my neighbours; and, in proceſs of time, muſt prove a public benefit, eſpecially in a country ſurrounded by the famous bay which the ancients called *Portus Salutis*.

I obſerve, from laſt year's publication, you have had no correſpondents in North Britain; but I conclude no diſtinction is made between South and North Britain; and you will obſerve that ſix volumes have been lately publiſhed in the name of a Mr. Wight, who ſurveyed the country by order of the Commiſſioners of annexed eſtates, which are not unworthy of your peruſal.

I am, Sir,

Your moſt obedient,

humble Servant,

GEORGE ROSS.

Mr. SAMUEL MORE.

Richmond, Surry, Nov. 11, 1784.

SIR,

IN anſwer to your letter of the 9th, deſiring to be informed, for the information of the Committee, of the preſent ſtate of my young plantations at Cromarty, you will be pleaſed to know, that though I have not been there myſelf this ſummer, my nephew, Mr. Gray, has, who reports that they are all in a very thriving condition, barring ſome that in ſo extenſive a plantation have failed, for the renewal of which, orders have been given.

With reſpect to the account you deſire of the age and ſize of the Firs and Oaks I found upon the eſtate when I made the purchaſe, I beg leave to acquaint you that I found a large plantation, conſiſting of four hundred acres, ſituated on the peninſula of that eſtate, of the age of thirty years; and in cutting roads and walks through this plantation, ſeveral Oaks, Aſh, and Elms, intermixed, and ſtruggling in growth with the Firs, which ſatisfied me that the ſoil would produce ſuch trees; and therefore I proceeded in cutting down ſome of the firs, and planting from my nurſeries, from time to time, Oak, Aſh, and Elm, under the ſhelter of the Firs left ſtanding; and by that means, in proceſs of time, that plantation will become a foreſt of uſeful timber.

I am, Sir,

Your moſt obedient and

moſt humble ſervant,

GEORGE ROSS.

Mr. SAMUEL MORE.

By the certificate mentioned in the firſt letter from Mr. Roſs, ſigned George Bavin, gardener, and atteſted by Mr. Walter Roſs, it appears that there were planted, on the eſtate of George Roſs, Eſq. at Cromarty, in North Britain, from the month of March, 1783, to the month of

May,

May, 1784, on ground well fenced, the following trees, viz.

OAKS.—Ninety thouſand three hundred.

ELMS.—Thirty-one thouſand two hundred.

ASH.—Forty-two thouſand.

BEECH.—Thirteen thouſand two hundred.

SYCAMORE.—Two thouſand one hundred.

CHESNUT.—Four thouſand.

LARCH.—One thouſand nine hundred.

SCOTCH FIRS.—Three millions five thouſand.

Total.—Three millions, one hundred, eighty-nine thouſand, ſeven hundred trees.

CULTURE OF WHEAT.

THE thanks of the Society were ordered to Mr. Boys, of Betſhanger, in Kent, for the following communications reſpecting his experiments on the culture of different kinds of Wheat.

Betſhanger, Feb. 10, 1783.

SIR,

IN order to aſcertain what ſort of Wheat is moſt advantageous to be cultivated on a good dry loamy ſoil, I have made two experiments, which were purely for my own information; but ſeeing they may tend to the public advantage by being made known, and having been encouraged by you, when I had the honour of waiting on you in town, to communicate any thing I might have to offer, have encloſed an account of them, and requeſt the favour of you, if you think them of ſufficient importance, to lay them before the Honourable Society for the Encouragement of Arts, Manufactures, and Commerce.

I am, Sir,

Yours, reſpectfully,

J. BOYS.

Mr. SAMUEL MORE.

In the autumn of 1776, I ſowed five half acres with different ſorts of Wheat on a clover lay, in the middle of a field of fourteen acres, which was quite on a level, and the ſoil exactly the ſame, all ſowed in one day, and managed preciſely in the ſame manner, and laid ſeparately in the barn, and carefully threſhed and meaſured.

In the autumn of 1781, the ſame field being to be ſown with Wheat, to prove whether a different ſeaſon and different tilth, it being this time a bean ſtubble, might make much difference; not having any yellow Lammas Wheat, I meaſured out four half-acres about the ſame place, and went on the ſame as before with the other four ſorts: the accounts of each as follows.

Date.	Sorts of Wheat.	Produce per half Acre.			Produce per Acre.			Value per Quar.		Value per Acre.		
		Quar.	Buſh.	Gall.	Quar.	Buſh.	Gall.	s.	d.	£.	s.	d.
1777.	Hoary White	1	6	1½	3	4	3	45		7	19	7
	Fulham	1	6	1	3	4	2	41		7	4	9¼
	White Straw	1	6	0	3	4	0	43		7	10	6
	Yellow Lammas	1	4	0	3	0	0	44		6	12	0
	Brown Lammas	1	3	6	2	7	4	44		6	9	3
1782.	Hoary White	2	6	2	5	4	4	52	6	14	12	0¼
	Fulham	2	6	0	5	4	0	48		13	4	0
	White Straw	2	6	0	5	4	0	50		13	15	0
	Brown Lammas	2	3	0	4	6	0	51		12	2	3

The prices annexed were the value of the different ſorts as the markets were at the time of threſhing, according to the beſt of my judgment. The buſhel contains eight gallons and one quart.

The crop laſt year was the moſt abundant I ever knew, which was owing to the wet ſummer, as that ſuits our dry ſoils very well: the produce in general is about three and a half quarters per acre.

It appears by theſe experiments, that the Hoary White is the beſt to cultivate on ſuch ſoil, and very far ſuperior to the common Brown Lammas, which I believe is the ſort moſt generally ſown.

The Fulham produces about the ſame crop, but being a very coarſe Wheat with a thick bran, is of very inferior value. There is another ſort of white Wheat, which is by ſome cultivated in this neighbourhood, called the Egg-ſhell White, which I did not try, having a particular averſion to that ſort, on account of its being ſo free in the ear as to drop out in the field, which would not ſuit our hills, that are much expoſed to high winds: it is a ſort much eſteemed by the Millers. If experiments of this kind are acceptable to the Honourable Society, you will probably hear further from

Your humble ſervant,

J. Boys.

Mr. Samuel More.

DIBBLING WHEAT.

THANKS were returned to Mr. Wagſtaffe, the writer of the following letter, for the information contained therein reſpecting the mode of dibbling Wheat, as practiſed in Norfolk: and in conſequence of the intimation therein given by him, a premium was offered for communicating to the Society the beſt ſet of experiments to aſcertain the merits of that practice in the culture of Wheat when compared with ſowing it in broad-caſt, or drilling it in equidiſtant rows.

To the Society for the Encouragement of Arts, Manufactures, and Commerce.

Norwich, Oct. 27, 1783.

GENTLEMEN,

I TAKE the liberty to addreſs you on a ſubject I conceive will be worthy your patronage, viz. the dibbling or dropping of Wheat, which, though prevailing in this part of the nation, ſeems little underſtood, or ſcarcely apprehended, in the ſouthern, north-weſt, and midland counties.

Your encouragement hath been handed forth during ſome years, for the beſt ſet of experiments to aſcertain whether it is moſt advantageous to cultivate Wheat by ſowing it in the common broad-caſt way, or by drilling it in equidiſtant rows. Whether you have had this comparative difference aſcertained, is not neceſſary for me to enquire; my purpoſe is a wiſh that, in handing forth a future encouragement, you might ſee it eligible to connect this late mode of propagation with the two former: I have been long perſuaded it is ſuperior to either, and that, purſued on lands of a certain deſcription, it will be productive of much national advantage, and with no hazard of comparative loſs applied to any lands, experimentally known to be ſuitable to this grain.

I ſhall therefore beg leave to mention, having with you the good of the public in object, that being connected by neighbourhood, or buſineſs, with divers farmers, ſetters of Wheat, and having tried it myſelf upon a ſmall ſcale, yet the largeſt I was capable of, and been a cloſe obſerver, from its beginning, through its ſucceſſive adoptions in the part of the country where it began; I therefore hold myſelf ready to communicate any intelligence to you, that may tend to your forming a ſuitable judgment thereon, and as a ground for your future encouragement.

I may likewiſe add, though perhaps prematurely, that as the practice is novel, and in ſpeculation unpromiſing, and has been conſidered as a refinement by genius, at a diſtance, I conceive it would be in my power, upon your compenſation for time and travelling, at a future ſeed-time, to excite a dibbler, with one or two of his droppers, to go to any place within fifty miles of London.

This, I preſume, would impreſs an adequate idea of its mode, make the practice eaſy to their imitators, and in due time give an evidence which ſpeculation is ſcarce capable of attaining, that the œconomy of ſeed tends to an increaſe ſomewhat proportionable to the houghing up nine tenths of a Turnep crop, which experience has evinced augments their real produce: yet in the ſetting of Wheat, as in the thinning of Turneps, it muſt be under a regulation, and preciſion of judgment, which nevertheleſs practice can render eaſy, and an intelligent obſerver ſoon acquire.

I am, with great attention,

Your reſpectful Friend,

JOHN WAGSTAFFE.

P. S. I can ſcarce refrain obſerving that this preſent ſeed-time more Wheat hath been ſet and land reſerved for its continuance, within the diſtance of ten miles from Norwich, than in any preceding year, and peculiarly ſo in the hundred where it originated, while it is diffuſing (though ſlowly) in every direction, and is now extended into a neighbouring county.

HOWARD, OR CLUSTERED POTATOE.

IN the year 1779, the Silver Medal of the Society was voted to Arthur Young, Eſq. of Bradfield Hall, near Bury, Suffolk, for the following account of the culture, produce, and application of the Howard or Cluſtered Potatoe.

From the general tenor of the premiums offered by the Society, relative to the Howard Potatoe, I apprehend they wiſh information not only in the mode of cultivating it, but the quantity of the produce, and the uſes in feeding cattle, as they have at different times offered three diſtinct premiums for theſe objects. My experiments on either of the three, ſeparately taken, might not be worthy of their attention; I ſhall therefore blend them into one account, though I, by ſo doing, ſhall hazard that ſtrict compliance with their conditions which they may require; and I ſhall venture this the rather, as I ſhould otherwiſe be a candidate for three medals inſtead of one.

EXPERIMENT I.

PRODUCTIVE QUALITY. April 4, 1770. Having a ſmall Howard Potatoe, cut it into four ſets, planted them on a hillock of ſandy loam, ſcattered with two pecks of poultry dung; when they came up, earthed them with one peck of chalk, and ſoon after with two pecks of rotten yard dung, again with one peck of poultry dung, and a layer of loam. I was abſent a conſiderable part of the ſummer, and therefore could not mark the progreſs of the vegetation, whether checked or accelerated by theſe earthings. Dug them up in November 16; the produce, ninety Potatoes, meaſuring two pecks, ſome of them remarkaby fine, weight thirty-one pound; the quantity of land occupied, four ſquare feet; the acreable produce, one thouſand three hundred and ſixty-one buſhels.

EXPERIMENT II.

COMPARISON WITH OTHER SORTS. March 20, 1771. Manured three furrows of ridges, four feet and a half broad, and ſeventy yards long, with ſix loads of farm-yard dung; the ſoil, a wet hungry gravel, naturally poor. In 1770, it was manured ſeventy loads an acre, of earth and dung, drilled with Lucerne; but, failing, it was ſummer-fallowed for Turneps, but not ſown. Through a ſervant's miſtake, the dung for the Potatoes was laid in the furrows, and the ſets upon it in a double row, twelve inches apart, and as much from ſet to ſet; one buſhel of ſeed. Covered them by reverſing the ridges with a plough; alſo five ridges contiguous, dunged in the ſame manner, with two buſhels and half a peck of Red-noſe Kidney, ſuppoſed, at London, to be the moſt prolific ſort; alſo two other ridges, dunged in the ſame manner, with five pecks, a mixture of Golden Tags, and Golden Ruſſets from Lancaſhire.

The firſt week in June, hand-hoed the rows; the middle of the ſame month, horſe-hoed the intervals with a Berkſhire ſhim, which cuts the ſurface, but turns no furrow; followed this with a large double mould-board plough, which earthed up the rows, clearing the furrows, and leaving the land in beautiful order.

July 12, hand-weeded the rows; the middle of Auguſt, repeated the ſhimming and double mould-board plough; the firſt week in September, hand-weeded; the latter end of October, ploughed them up.

Produce.	*Buſhels.*
Three ridges of Howards	24
Five ditto Red N. Kidney	16
Two ditto Tags and Ruſſets	9

Which, per acre, makes	*Buſhels.*
Howards	360
Kidneys	144
Tags and Ruſſets	207

Account of the Howards per acre.

	Expences.				*£.*	*s.*	*d.*
1770.	Four ploughings, at 6s.				1	4	0
	Three harrowings, at 9d.				0	2	3
	Seventy loads of compoſt, at 2s.				7	0	0
	Rent	0	8	0			
	Rates	0	1	2			
	Repairs*	0	1	0			
	Fences*	0	1	6			
					0	11	8
	Carried over				8	17	11

---

* This upon an average per annum, over the whole farm.

		£.	s.	d.
	Brought over	8	17	11
1771.	One ploughing	0	6	0
	Eighty-nine loads of compoſt, at 2s.	8	18	0
	Eighteen buſhels, ſets 2s.	1	16	0
	Planting	0	6	0
	Harrowing	0	0	9
	Hand-hoeing	0	2	6
	Shimming	0	0	9
	Moulding Plough	0	5	0
	Weeding	0	1	6
	Horſe-hoeing repeated	0	5	9
	Weeding	0	3	0
	Ploughing and picking	1	6	0
	Annual charges as before	0	11	8
		23	0	10

Produce.	£.	s.	d.
Three hundred and ſixty buſhels, two ſhillings the ſelling price, but ſuppoſe 1s. 6d. the price of common Potatoes	27	0	0
Expences -	23	0	10
Profit	3	19	2

Account of the Kidneys.

Produce.	£.	s.	d.
One hundred and forty-four buſhels, at 1s. 6d.	10	16	0
Expences, the ſame, the ſmall variation in the ſeed not worth noting	23	0	10
Loſs - - - -	12	4	10

Account of the Tags and Ruſſets.

Produce,			
Two hundred and ſeven buſhels, at 1s. 6d. -	15	10	6
Expences - - - - -	23	0	10
Loſs - - - - - -	7	10	4

OBSERVATIONS.

The ſoil above deſcribed is perhaps the moſt unfit of all others for common Potatoes; but being informed that the Howard would thrive where other ſorts would not, I purpoſely choſe it. The event is remarkable, and proves clearly that on theſe wet tenacious gravels, great crops of that ſort may be gained: the unſatisfactory circumſtance is, the value of the crop; a circumſtance general with Potatoes, for their price varies exceedingly, and what is worſe, have ſometimes no price at all for large quantities; conſequently, if they cannot be conſumed at home by cattle profitably, the object is not an important one. Two manurings being charged to one crop, render the expence very high. It muſt however ſtrike every perſon, that, had the Potatoes no more than paid the expence, the return would have been prodigiouſly advantageous, as the land is left in uncommon order for ſucceeding crops.

It is neceſſary here to remark, that the value of two ſhillings a load for the manure is for a one-horſe three-wheel carriage or cart, which holds about eighteen buſhels, and is the average expence of my farm-yard compoſt for ſeveral years paſt. In the ſummer I cart a layer of marle, turf, or mould, over all my yard; and in the following winter fodder my cattle on it, cleaning the ſtables, cow-houſe, and hog-ſtyes on to it, bones, night ſoil, coal-aſhes, ſullage of ſtreets, or whatever manure I buy. In the ſpring I turn the whole over, mixing well together, and cart it for Potatoes. The two ſhillings includes filling, ſpreading, carting, and in a word, all expence whatever.

EXPERIMENT III.

In ploughing up the preceding crop, two lands were thrown into one, and early in the ſpring ſplit again; after which one of them, where the Howards had been, coming up tolerably thick, from the ſmall Potatoes left, I deſiſted from ploughing it up, in order to ſee what the reſult would be: it was hand-hoed once, and weeded twice; and being taken up in November, 1772, the produce was ſix buſhels, or per acre two hundred and ſeventy-ſix, which, at one ſhilling and ſixpence, is twenty pounds fourteen ſhillings.

EXPERIMENT IV.

CULTURE, EXPENCES, PRODUCE, AND APPLICATION OF ONE HUNDRED AND TWENTY PERCH. 1772. The ſoil, a deep ſandy loam; it was under Carrots in 1771, and ploughed flat in autumn: the extreme wetneſs of the ſpring prevented my carting on the dung till the ſixth of April, and then only thirty loads. Rain coming the eighth, prevented going on with it. Spread the compoſt; and on the thirteenth ploughed it into four feet ridges, ſtriking the furrows immediately with the double mould-board plough: at the ſame time drew furrows at four feet diſtance, as paths for that large plough to open trenches to lay the dung in, that I might ſee which method anſwered beſt, ſpreading the manure all over the land, or laying it in furrows under the crop; but heavy rains impeded the work. The fourteenth it rained from five in the morning till ten at night, a cruel ſeaſon for Potatoe-planting: the piece ploughed the thirteenth did not work ſo well as it ought; indeed the ſeaſon had been ſo wet, that no land except lays ploughed tolerably. April twenty-ſecond and twenty-third went on with the manuring; and the twenty-ninth, planted part, laying the ſets in double rows, at one foot, on the dung, and covered them immediately with the plough, reverſing the ridges: the part ploughed, with deſign to dibble, baked too hard for it; ploughed it therefore again, planting it in ſingle rows: the plough firſt turned a furrow from one ſide of each ridge, and upon the back of this furrow the ſets were laid, ſix inches apart; the plough then returning, and taking a ſimilar furrow from the oppoſite ridge, covered the ſets, which muſt of courſe come up in the middle of the new ridge. The dung which was ſpread over the land fell on to the ſets in ploughing, as I could wiſh. May firſt, finiſhed, and, the fourth, planted it; during the ſummer, hand-hoed once, hand-weeded once, and horſe-hoed twice, once with ſhim, and once with double mould-board. Nothing made a more beautiful appearance than theſe potatoes throughout the ſeaſon: the verdure and luxuriance of the herbage, notwithſtanding the ſeverity of the drought which followed that wet ſpring, was a moſt pleaſing ſight; nor was there to be ſeen a weed throughout. November fourteenth, began taking them up. Eighteen rows and a half planted on the dung, one hundred and ten yards long by four feet broad, produced two hundred and thirteen buſhels, dirty: that ſpace makes ninety ſquare perch: the proportion per acre is, three hundred and fourteen boſhels, deducting one ſixth for dirt. Six rows, where the dung was ſpread, produced ſixty-four buſhels and a half dirty, clean fifty-three, one ſixth deducted: proportion per acre, two hundred and ninety-two. Total produce, dirty, two hundred and ſeventy-ſeven buſhels. For ſecuring them during the winter, I ſpread the floor of a ſmall barn with truſſes of ſtraw, cloſe to each other, and the ſame around the ſides of the barn; the Potatoes were laid in with all the dirt that ſtuck to them; ſome were very wet. I did not open the heap till the end of January, when the whole was one hard dry maſs, and the Potatoes very ſound and good; upon meaſuring them clean, the produce was two hundred and forty-ſix buſhels: the dirt therefore did not amount quite to one ſixth. One hundred and twenty perch producing two hundred and forty-ſix, is at the rate of three hundred and twenty-eight per acre.

Expences per acre.

		£.	s.	d.
1771.	Ploughing - -	0	6	0
1772.	Compoſt, one hundred loads, at 2s. -	10	0	0
	Ploughing - -	0	6	0
	Twelve buſhels, ſets at 1s. 6d. -	0	18	0
	Slicing and Planting	0	6	0
	Harrowing - -	0	0	9
	Hand-hoeing - -	0	10	0
	Hand-weeding -	0	3	0
	Horſe-hoeing ſhim	0	0	9
	Double mould-board	0	5	0
	Ploughing up -	0	6	0
Carried over - - -		13	1	6

	£.	s.	d.
Brought over	13	1	6
Picking up, $1\frac{1}{4}$d. per buſh.	1	14	2
Carting home, drawing over, and cleaning	1	0	0
Annual charges -	0	11	8
Value aſcertained	16	7	4

February the eighth, &c. In a copper that held ſix buſhels, boiled at ſeveral times ſeventy-five buſhels, with ninety buſh-faggots, turning them out of the copper into a tub, wherein they were maſhed: from this tub, put the maſh without any liquor into a ciſtern; adding, as it was done, nine buſhels of barley in meal: a boy in the ciſtern mixed them well together with a ſpade. Bought five Hogs of the Chineſe breed, and weighed them alive.

No. 1	—	121 *lb.*
2	—	117
3	—	102
4	—	95
5	—	98
		533

They coſt ſix pounds, thirteen ſhillings, and three-pence, which is threepence per pound alive. Upon finiſhing the Potatoes, they were weighed alive, killed, and ſold; which was rather a diſadvantage, as none of them were quite fat. I did it however for the ſake of gaining the knowledge I made the trial in ſearch of. They weighed ſeven hundred and eighty-four pounds alive, and five hundred and ten pounds dead, which ſold at ſix-pence per pound, or twelve pounds, fifteen ſhillings: this proportion is nearly twenty pounds alive, giving thirteen dead. N^os^ 1 and 2 were weighed at different times, and gained, the firſt three weeks of fatting, two pounds and a quarter each, per diem, which is very conſiderable. The expences were,

	£.	s.	d.
Coſt of the Hogs	6	13	3
Labour, waſhing Potatoes, and boiling	0	6	0
Ninety buſh-faggots, value	0	5	0
Nine buſhels Barley	1	16	0
	9	0	3

Produce.	£.	s.	d.
Sold at	12	15	0
Deduct	9	0	3
Remains, which is the value paid for the Potatoes	3	15	9
Or per buſhel, one ſhilling.			

When I found the hogs thriving ſo well, I expected the Potatoes to pay a higher value than this; not but a ſhilling a buſhel in an application that goes to any quantity, is a great object.

But as the prices of Pork and Barley may vary, I ſhall give the product of Pork yielded by this quantity of food.

	lb.
The Hogs, when killed fat, weighed	510
At putting up, they weighed alive 533lb. This would have been, dead, at 13 for 20 - - -	346
The gain of Pork was therefore -	164

Thus ſeventy-five buſhels of Potatoes, and nine of Barley, yielded one hundred and ſixty-four pounds of Pork: this is a fact which may be uſeful, whatever the price of Barley is, and for whatever Pork may ſell.

The mere increaſe of dead weight is not the whole profit, or it would not pay the expence: there is, beſides, the profit on converting lean to fat, if bought at three-pence alive weight; but three hundred and forty-ſix dead, at ſix-pence, would be eight pounds, thirteen ſhillings; whereas they coſt but ſix pounds thirteen ſhillings.

The Society will obſerve, that this value of one ſhilling per buſhel, is found only from one experiment, which though it anſwers for fixing the amount of this crop, yet repeated ones muſt be made to diſcover what may be reckoned a ſtandard value.

Produce.	£.	s.	d.
Three hundred and twenty-eight buſhels, at 1s. -	16	8	0
Expences - - -	16	7	4

Hence therefore the crop paid the expences; which, conſidering the ample manuring and the great order the land is left in, muſt be eſteemed a very conſiderable profit. The great object of tillage is to find a fallow crop which will pay its expences, manuring included. Every farmer knows that Turneps, under the laſt perfection of culture, will never do this; but if Potatoes uſed at home can be made to do it, every beneficial purpoſe is anſwered; for the conſumption by fattening Hogs raiſes a large quantity of valuable dung.

EXPERIMENT V.

CULTURE, EXPENCES, PRODUCE, AND APPLICATION OF FOUR ACRES. 1773. This field was at the end of its courſe, and now ready for a fallow. I determined to make Potatoes the fallow, having from the experience of the preceeding trials, among ſome others I had formed, been convinced of their importance. The ſoil, a poor gravelly loam, but not ſo wet, tenacious, or ſo bad as that mentioned in Experiment II. It was an oat ſtubble on broad flat lands: theſe were ploughed into the four-feet ridge the beginning of November, 1772, and ſo left for winter.

April the fourteenth, 1773, ploughed it again, reverſing the ridges, and immediately on this ploughing carted two hundred and eighty-three loads of farm-yard

compoſt,

compoſt, made the preceding winter, which was ready turned over and mixed for the purpoſe, into the furrows, and planted the ſets in one row, twelve inches aſunder, along the middle of the dung. It took ſeven buſhels an acre: this by women and children, and I found they did it very quick; a plough followed, which, taking off a ſlice from the ſides of each ridge, covered the Potatoes and the dung. As in ſeveral parts of the field I found much graſs and weeds, I did not complete the operation of reverſing the ridges then, that the ſun might have the more power on the land; but did the ſecond bout in a fortnight after, which left the ridges in their firſt form.

The eighteenth and nineteenth of June the plants being about ſix inches high, I turned a furrow from the ſides of each ridge, leaving the plants upon a ſlip of a foot wide. This part of the horſe-hoeing ſyſtem I thought neceſſary before the hand-hoes went to work; for it turns every large knot of graſs and weeds from the plants into the middle of the intervals, where they are much eaſier deſtroyed, and it leaves the plants far eaſier to hoe. Upon this they were hand-hoed at two ſhillings and ſix-pence per acre; but being a hard job, the men had eleven ſhillings. July the firſt, harrowed the intervals flat with the horſe-hoe harrow, ſome parts of the field twice and thrice in a place, to tear the graſs in pieces, which it did ſo effectually, breaking the clods at the ſame time, that the ſun killed much of the rubbiſh.

July the fifth, began a ſecond hand-hoeing: as this was the laſt they could have, and every little weed to be eradicated, I had it done by the drag. As ſoon as the weeds of this hoeing were dead, began to earth up the rows with the double mould-board plough.

Auguſt twentieth, &c. hand-weeded them; October thirteenth, began to take them up, and finiſhed the twenty-third. I had the ſtalks pulled up, and carted to the yard for dung, and then ploughed two ridges into one; and men with three-pronged forks followed, who broke the furrows in pieces, each attended by a boy or girl, with a baſket to pick up the Potatoes, and carry them to three-wheeled carts that ſtood ready to receive them. The weather proved very fine, which is an article of great conſequence in taking up Potatoes. The crop was one thouſand five hundred and ſixty-two buſhels; the expence in labour of taking up, five pounds and one penny, or three farthings per buſhel: and four horſes per day, added, at ſeven ſhillings and ſix-pence, is three pounds fifteen ſhillings: in all, eight pounds, fifteen ſhillings, and one penny; which is five farthings per buſhel, a ploughing to the land included. The crop is, per acre, three hundred and ninety buſhels; and they were quite clean, a circumſtance much depending on the dryneſs of the ſeaſon when taken up. I packed

I packed them into a barn, in the ſame manner as deſcribed before.

	Expences.	£.	s.	d.
1772.	Ploughing, at 6s. -	1	4	0
1773.	April ditto - -	1	4	0
	Two hundred and eighty three loads of compoſt, at 2s - -	28	6	0
	Twenty-eight buſhels of ſets, at 1s. - -	1	8	0
	Planting and ſlicing	0	13	0
	Ploughing to cover	1	4	0
	Harrowing at 9d. -	0	3	0
	Slicing the ridges with plough, at 3s -	0	12	0
	Hand-hoeing -	0	11	0
	Horſe-hoeing - - - -	0	4	6
	Second hand-hoeing	0	8	0
	Horſe-hoeing double mould-board plough, at 5s. - -	1	0	0
	Carried over - - -	36	17	6

	£.	s.	d.
Brought over	36	17	6
Hand-weeding -	0	10	0
Taking up and carting home - -	8	15	1
Annual expences 11s. 8d.	2	6	8
Value aſcertained -	48	9	3

November the ninth, I began to waſh Potatoes in order for boiling: this is an operation of ſome trouble, eſpecially with the cluſtered ſort; if it is not well done, the dirt ſinks to the bottom of the copper, and ſticks there till it burns. The ſeventeenth, began and boiled two hundred and ſixty buſhels: the expence of fuel was one penny per buſhel; waſhing, one penny; and labour boiling, a halfpenny. With the maſhed Potatoes in the manner before deſcribed, thirty-three buſhels of Barley-meal were mixed: ſix, four, and five Hogs were ſucceſſively put to this meat, their weight alive as follows.

No. 1

		lb.
No. 1	—	134
2	—	120
3	—	100
4	—	140
5	—	122
6	—	116
7	—	112
8	—	118
9	—	124
10	—	126
11	—	126
12	—	128
13	—	96
14	—	102
15	—	94
		1758

Seven of them I bred; the reſt I bought: the latter coſt me very near three-pence per pound alive; and I value the others accordingly. Total, nineteen pounds, ſix ſhillings.

December tenth, began to fat, and the middle of February, began to kill and ſell them: the total live weight fat, two thouſand five hundred and fifty-ſix pounds. They ſold from five-pence to ſix-pence, yielding thirty-ſix pounds fourteen ſhillings and eight-pence; which, upon an average, is about five-pence farthing.

	£.	s.	d.
Coſt and value of the Hogs	19	6	0
Waſhing - - -	1	1	8
Firing - - -	1	1	8
Boiling - - -	0	10	10
Barley, thirty-three buſhels, at 4s.	6	12	0
	28	12	2

Produce.	£.	s.	d.
Sold at - -	36	14	8
Deduct - -	28	12	2
Remains value of the Potatoes, which is per buſhel 7½d.	8	2	6

There were two reaſons for the fall from one ſhilling laſt year, to ſeven-pence halfpenny this. Pork did not ſell ſo well, while Barley kept to its price; and there were four among the Hogs that did not thrive kindly: all ſuch circumſtances, however, it is right to include, as the ſtandard value can only be aſcertained from the average of a variety of circumſtances. But let the Society always remember that, in addition to the value reſulting from feeding Hogs, there is the dung ariſing to be added, which is an object of the greateſt importance.

Beſides this trial to aſcertain the exact value, I had this winter an opportunity of examining how far this root might be uſeful to the common ſtock of Swine which ran looſe in the farm-yard: a large Boar, three Sows, and eight Stores, had no other food from November till the end of June, the Potatoes keeping perfectly well quite through that month. There was an eaſe and expedition in feeding them that pleaſed me very much: a man with a ſpade dug into the heap, and threw them out of the barn-door twice a day, which he performed in two minutes: for experiment ſake, I meaſured them for ſome weeks, and the quantity was two buſhels a day, which kept thoſe hogs in very high order; they did not however eat the whole, for no attention could keep the cows and young cattle from partaking, which they did ſo eagerly, that I was convinced they would prove a beneficial food to them.

Suppoſe the Potatoe-ſeaſon ſix months, or one hundred and eighty days: twelve middling Hogs would require three hundred and ſixty buſhels, or an indifferent acre; and they would certainly, in a yard properly littered, raiſe dung enough to manure one acre very amply; which, with the profit of their growth, would, I am confident, amount to more than ſevenpence halfpenny a buſhel.

I tried them with a Horſe this winter, who eat them readily, inſomuch that I allotted him a peck a day, inſtead of half a peck of oats. He was employed in common home work, and did as well on them as on the Oats; but I cannot anſwer for the accuracy of the trial, as my ſervants were alarmed at any idea of their doing for Horſes, they are prejudiced in favour of Oats, and apprehenſive of more trouble.

Produce.	£.	s.	d.
One thouſand five hundred and ſixty-two buſhels, at 7½d. - -	48	16	3
Expences - - - -	48	9	3
	0	7	0

The Society will carry in their mind the importance of a fallow crop paying the expence of a rich manuring; for in that point, and not the expectation of a profit beſides, lies the incitement to cultivate this root.

EXPERIMENT VI.

CULTURE, EXPENCES, PRODUCE, AND APPLICATION OF SIX ACRES. 1774. The ſoil in part of this field much the ſame as that of the laſt Experiment, but the greater part inferior, a ſharper gravel. In autumn of 1773, ploughed it into four feet ridges, in which form I left it for the winter. April ſecond, 1774, began to cart the winter compoſt into it, ſee page 38, and finiſhed May twenty-firſt, finiſhing the planting alſo on that day: the dung was laid in the furrows in the ſame manner as before, and a ſingle row of ſets upon it; the quantity of manure, five hundred thirty-two loads. Immediately covered the dung and ſets, by one bout to every row as before; the twenty-fifth finiſhed reverſing the ridges. June firſt, harrowed them. The twenty-fourth, ſliced the ridges, turning a furrow on each from the rows. The twenty-ninth, began to hand-hoe the rows. July fifth, horſe-hoed and harrowed the intervals. July nineteenth, &c. repeated that operation. Auguſt twentieth, ſtruck the intervals with double mould-board plough. October twenty-eighth, began to take up the crop. Heavy rains, November ſixth and ſeventh, which interrupted us; but finiſhed the fifteenth. The crop dry out of the barn, one thouſand ſix hundred and ſixty-ſeven buſhels, the expence of taking up which was, performed exactly as laſt year, ſeven pounds eighteen ſhillings and a penny, or one penny one-eighth per buſhel; add fourteen days of four horſes, at ſeven ſhillings and ſixpence, five pounds five ſhillings: in all, thirteen pounds three ſhillings and one penny, or near two-pence a buſhel, including the ploughing; the produce per acre, two hundred and ſeventy-ſeven buſhels.

Expences

	Expences.	£.	s.	d.
1773.	Ploughing, at 6s.	1	16	0
1774.	April, five hundred and thirty-two loads of compoſt, at 2s.	53	4	0
	Forty-two buſhels, ſets 1s. - - - - - -	2	2	0
	Cutting and planting	1	0	0
	Ploughing - - - -	1	16	0
	Harrowing twice	0	9	0
	Slicing ridges - - -	0	18	0
	Hand-hoeing - - -	0	14	0
	Horſe-hoeing - -	0	9	0
	Double mould-board plough, 5s. - - - - - -	1	10	0
	Taking up, carting home, and packing - - -	13	3	1
	Annual expences, at 11s. 8d.	3	10	0
		80	11	1

VALUE ASCERTAINED.

THE middle of December put five of my Stores to fatting: they weighed, alive, five hundred and ſixty pounds; and I am to value them at three-pence per pound, or ſeven pounds: confined them to a ſmall yard by themſelves, well littered with clean wheat ſtraw (an object eſſential to fattening Hogs to profit); and gave them twenty buſhels of boiled Potatoes, no meal mixed with them: when they had finiſhed that meſs, they had another ready, conſiſting of eighty buſhels of Potatoes boiled, maſhed, and mixed with the meal of eight buſhels of Barley, which completed their fattening. They were ſold alive for thirteen pounds ten ſhillings, and weighed nine hundred and ſeven pound. Pork was at five-pence halfpenny.

Expences.	£.	s.	d.
Value of the Hogs	7	0	0
Eight buſhels of barley, at 3s. 10d.	1	10	8
Waſhing a hundred buſhels Potatoes, 1 ½d.	0	12	6
Boiling, ½d.	0	4	2
Fuel, 1d.	0	8	4
	9	15	8
Sold at	13	10	0
Deduct	9	15	8
Remains value of Potatoes	3	14	4

Which is per buſhel nine-pence.

I ſhould have made a larger experiment than upon five Hogs, had I not been abſent a good deal this winter, and at the farm only once a week for ſome time. Two of theſe hogs were Chineſe, and far excelled the reſt in the thriving.

Beſides this trial, I attended to the lean ſtock: ten Stores, pigged the twenty-eighth of June preceding, with two large Sows and a Boar, were carried through the winter on Potatoes, thrown out of the barn, in the manner before deſcribed, till the Clover was ready for them in May; and they eat juſt two buſhels a day. The ten were ſold from the Clover, in the October following, at thirty ſhillings each. I was very attentive to the progreſs of theſe Hogs; and I am clear, that by buying or taking one's own to Potatoes in November, when at the value of ten ſhillings a ſtore, they will be on an average thirty ſhillings, from the following Clover; and I found this, on repeated obſervation, as well as on this trial. In this way they have ſix months Potatoes and ſix months Clover. An acre of good Clover, which will ſell in the country, out of the ſphere of London hay-markets, for forty ſhillings, will carry ſixteen Hogs that time, and afford food for a young Heifer, or Steer. Beſides allowing for the ſize of the two Sows and the Boar, and alſo for the Potatoes eaten by Cows and other ſtock, I am clear the two buſhels a day would amply maintain ſixteen Hogs.

	£.	s.	d.
Profit on ſixteen Hogs, bought at ten ſhillings, and ſold at thirty	16	0	0
Deduct for one acre Clover	2	0	0
Remains value of the Potatoes - - -	14	0	0
Which, for three hundred and ſixty buſhels, is per buſhel nine-pence farthing.			

Price depending partly on valuations, the Society may not approve it equally with fattening trials; but I am, from repeated obſervations, clear, that it is not above the truth; and I have been more than a dozen years largely in the huſbandry of feeding Hogs on Clover.

Produce.

Produce.	£.	s.	d.
One thouſand ſix hundred and ſixty-ſeven buſhels, at 9d. - - -	62	10	3
Expences - -	80	9	1
Loſs - - -	17	18	10

This produce was much inferior to what I had reaſon to expect; but, the ſtate of the field conſidered, the loſs of three pound per acre is not to be thought any alarming circumſtance. There is no crop of Turneps in this country worth above three pounds: that crop would have left a balance againſt me of more than forty pounds; and yet nobody can aſſert that Turneps are not profitable; but the ſtate which all theſe crops leave the land in, is the great object.

EXPERIMENT VII.

COMPARISON OF MANURES FOR THE HOWARD POTATOE. April 5, 1774. Marked twelve perch on a poor gravelly ſoil, but which in the preceding years had been very well drained and ploughed; made twelve ſquare lazy beds of them; ſpread the following manures on them, leaving a ſmall ſpace around for digging the trenches; laid the ſets twelve inches aſunder on the manure; then covered both about four inches deep out of the trenches.

No. 1 No manure for compariſon.
2 Five buſhels of night ſoil
3 Three ditto ditto
4 One ditto ditto
5 Five buſhels of bones, broken ſmall.
6 Three ditto ditto
7 One ditto ditto
8 Six buſhels of hog-dung, rotten

9 Three ditto ditto
10 Six buſhels of common yard compoſt
11 Twelve ditto ditto
12 Three ditto ditto

They were kept clean by hand-weeding.

November 15, dug and meaſured them immediately.

No. 1 Three pecks
2 Three buſhels three pecks
3 Four ditto and a quarter of a peck
4 Three ditto and a half ditto
5 Four ditto and a quarter ditto
6 Four ditto
7 Three and a half ditto
8 Three ditto
9 Three ditto
10 One ditto three pecks and a half
11 Three buſhels
12 Three pecks and a half

Proportions per acre of Manure and Crop.

No.		Crop
1	- - -	120 *buſhels*
2	Night-Soil, ten waggon-loads*	600
3	Ditto, ſix ditto	650
4	Ditto, two ditto	500
5	Bones, ten ditto	650
6	Ditto, ſix ditto	640
7	Ditto, two ditto	560
8	Hog dung, ſixty cart-loads† - -	480
9	Ditto, thirty ditto	480
10	Yard Compoſt, ſixty ditto - -	300
11	Ditto, one hundred and twenty ditto	480
12	Ditto, thirty ditto	140

The land remained through the winter untouched till April eighteenth, 1775; when dug the perches, and planted them again as before. October nineteenth, dug them; the produce as follows:

---

* Of ninety-ſix buſhels.

† As in the preceding Experiments.

No.		*Per acre.*
No. 1	Three pecks and a half - -	140 *buſhels*
2	Four buſhels -	640
3	Three ditto and half a peck - -	500
4	One ditto, three pecks and a half -	300
5	Four buſhels -	640
6	Three buſhels and a half - -	560
7	One and a half ditto	240
8	One buſhel three pecks and a half - -	300
9	One ditto - -	160
10	One buſhel and a half	240
11	One ditto and three pecks and a half	300
12	Three pecks and a half - -	140

There are ſeveral circumſtances in the reſult of this trial, which can not poſſibly be accounted for, which is generally the caſe with comparative ones of many parts; in general it ſhews that animal manures are the beſt in proportion to their ſtrength. Bones not only yield a rich nouriſhment, but lighten the mould for the roots; but night-ſoil has not this effect, unleſs from a ſtrong fermentation: bones ſeem to be the preferable manure, and will certainly laſt longer. The efficacy of rotten hog-dung appears conſiderable; and the advantage of a ſecond crop of Potatoes is clearly eſtabliſhed, the latter of which, not having the expence of manuring, muſt neceſſarily yield a very great profit.

EXPERIMENT VIII.

CULTURE, EXPENCES, PRODUCE, AND APPLICATION OF FIVE ACRES. 1775. The ſoil, a ſharp, wet, ſpringy, miſerable gravel,

vel, the worſt field on the farm, and not intrinſically worth five ſhillings per acre. Began to plough it December twenty-eighth, 1774, only four feet ridges. April twenty-firſt, 1775, began the manuring with the yard compoſt of the preceding winter, laying the dung in the furrows as before; the whole quantity, three hundred and twenty-ſix loads. Finiſhed May fifth; and the planting the thirteenth, as before. Horſe-hoed the furrows with ſhim, and double mould-board, finiſhing June the third. July eleventh, turned a furrow from the rows, which I call ſlicing. The twentieth, began to hand-hoe them, and finiſhed in five days. The twenty-eighth, horſe-harrowed the intervals, and afterwards ſtruck them up with double mould-board plough. October tenth, began to take them up, finiſhing the eighteenth; the crop, the pooreſt I ever had, only ſeven hundred and fifty buſhels, or one hundred and fifty per acre; total expence, taking up, carting, &c. ſeven pounds five ſhillings.

	Expences.	£.	s.	d.
1774.	Ploughing, 6s. - -	1	10	0
	Water furrowing -	0	6	6
1775.	Compoſt, three hundred and twenty-ſix loads, 2s.	32	12	0
	Slicing and planting -	0	15	0
	Thirty-five buſhels	1	15	0
	Ploughing - - - -	1	10	0
	Horſe-hoeing, ſhim, 9d.	0	3	9
	Double mould-board, 5s.	1	5	0
	Slicing, 3s. - - - -	0	15	0
	Hand-hoeing - -	0	10	0
	Horſe-hoe harrowing	0	3	9
	Double mould-board	1	5	0
	Taking up - - - -	7	5	0
	Annual expence, 11s. 8d.	2	18	4
	Value aſcertained	52	14	4

Three Stores of the true Chineſe breed were in December weighed alive; the weight, two hundred and ninety-ſeven pounds, which at two-pence halfpenny, the price I ſold others at, came to three pounds one ſhilling and ten-pence. Theſe were put to fattening; having boiled ſixty buſhels of Potatoes, and mixed the maſh with ſix of barley-meal, the food done, they were killed. Not being at home myſelf till afterward, the ſervants neglected to weigh them alive; but the dead weight was three hundred and fourteen pound, which, at ſix-pence a pound, the price then, is ſeven pounds ſeventeen ſhillings.

	£.	s.	d.
Value of the Hogs	3	1	10
Six buſhels meal, 4s.	1	4	0
Waſhing ſixty buſhels Potatoes, 1d. -	0	5	0
Fuel, 1d. - -	0	5	0
Boiling, a halfpenny	0	2	6
	4	18	4

	£.	s.	d.
Value fat - - -	7	17	0
Deduct - - - - -	4	18	4
Remains, being the value of Potatoes - -	2	18	8

Or, per buſhel, eleven-pence halfpenny.

I attribute this high value very much to the breed of the Hogs, which makes a greater difference than many perſons would without experience conceive.

Beſides this trial, I had, in the ſupport of my ſtore Hogs this winter, ample reaſon to be ſatisfied with this Potatoe. I had twenty-four Sows, Boars, and half-grown Stores, all which I carried through the winter; a ſtock larger than was to be found on any farm in the country four times as extenſive as mine. My crop however not being ſo abundant as in preceding years, I did not give them Potatoes till Janaary the twenty-third, it being then a moſt ſevere froſt. They had ſubſiſted upon

Turneps and Acorns, the latter of which I had bought at one ſhilling a buſhel: twenty-one Hogs in the yard eat juſt a cart load, eighteen buſhels of Turneps and one buſhel of Acorns, a day: but the latter being finiſhed, and the Turneps quite frozen, I then fully experienced the convenience of the Potatoe ſtore, without which, all my ſtock muſt have been ſold. Upon their being done, which was in April, I bought brewers grains for them; but the Hogs fell off in their looks ſo much, that I was forced to add an allowance of Barley for them. The Stores were turned in May to Clover; and I am clear that the Potatoes in this application paid me at leaſt nine-pence a buſhel. I would not have ſold them at the barn-door, during the froſt, at one ſhilling and ſix-pence.

	£.	s.	d.
By fattening - -	0	0	11 $\frac{1}{2}$
By lean ſtock - -	0	0	9

Average, ten-pence farthing.

Produce.

Produce.	£.	s.	d.
Seven hundred and fifty buſhels, at 10¼d. - -	32	0	7
Expences - -	52	14	4
Loſs - -	20	13	9

I deſerve much more condemnation than the Potatoes for this loſs: the ſoil was not to be truſted to, and accordingly gave me the worſt crop I ever had.

EXPERIMENT IX.

CULTURE, EXPENCES, AND PRODUCE, OF HALF AN ACRE. 1775. In the years 1773 and 1774, I had tried ſome very ſmall experiments, in order to aſcertain the moſt profitable diſtance at which to place the rows of the Howard Potatoe. They were not in the reſult attended with any abſolute deciſion; but I collected from them that I had hitherto given my crops too much room to have a large produce. Theſe little trials, which are very uſeful by way of hints, though not often worth keeping detailed accounts of, led me to try half an acre in another mode: the ſoil, a good dry ſandy loam. The operations were moſt of them performed at the ſame time as thoſe deſcribed in the preceding experiment; as the implements, &c. went from one to the other. It was a barley ſtubble left through the winter, on which fifty loads of the compoſt were ſpread over the whole ſurface; the plough then went in; and in reverſing the former flat lands, every other furrow was planted, the ſets at twelve inches aſunder; and as the plough carried nine inches, the Potatoes of courſe were in rows eighteen inches apart: five buſhels planted the half acre. Women laid, not dropped, the ſets cloſe to the unploughed ſide of the furrow, to eſcape, as much as might be, the horſes feet: as ſoon as finiſhed, harrowed the land twice; then rolled with a barley-roller, and harrowed once again, leaving it in fine order. In about a fortnight, or a little more, there was great appearance of Seed-weeds coming up: as theſe threatened a heavy expence of hoeing, I thought of cutting them all off, by going over the ſurface with the horſe-hoeing ſhim, which I did with my own hands; being apprehenſive that, if it went too deep, the ſhoots of the Pototoes which did not yet appear might be cut. Nothing could anſwer better than this operation, which however ſhould never be ventured but in dry weather. I then harrowed it: when the Potatoes were three inches high, the rows were hand-hoed, and, directly after, the intervals horſe-hoed with a ſhim, that cut only twelve inches wide. Both theſe operations were repeated once more afterwards; and, the end of Auguſt, a hand-weeding was given: the crop carried a moſt ſuperior appearance. In taking them up, the men, with their three-pronged forks, worked every furrow. The produce, two hundred and ſeventy-five buſhels, or per acre five hundred and fifty.

Expences per acre.

	£.	s.	d.
One hundred loads of compoſt, at 2s. - -	10	0	0
Ploughing - - -	0	6	0
Slicing and planting -	0	4	0
Ten buſhels of ſets -	0	10	0
Three harrowings, at 9d. -	0	2	3
Rolling - -	0	0	2
Shimming the ſurface -	0	2	0
Harrowing - -	0	0	9
Hand-hoeing - -	0	6	6
Horſe-hoeing with ſhim -	0	1	6
Second hand-hoeing -	0	5	0
Shim - - -	0	1	6
Hand-weeding - -	0	3	0
Taking up, &c. - -	3	8	9
Annual expences -	0	11	8
	16	3	1

Produce.	£.	s.	d.
Five hundred and fifty buſhels, at 10¼d. - -	23	9	9
Expences - -	16	3	1
Profit - - - -	7	6	8

OBSERVATIONS.

Every circumſtance of this crop convinced me that the mode purſued was far preferable to what I had hitherto practiſed, unleſs a field ſhould be exceedingly full of root-weeds, in which caſe the wide intervals are uſeful; but then I ſhould reccommend Turneps in preference. The produce of this trial is great; and the profit of above ſeven pounds an acre, after paying a manuring of ten pounds muſt be conſidered as one of the moſt beneficial crops that can be put into the ground, and would eſtabliſh the utility of the huſbandry, if there were not the after-advantages of the uſes in raiſing dung.

EXPERIMENT

EXPERIMENT X.

CULTURE, EXPENCES, PRODUCE, AND APPLICATION, OF FIVE ACRES. 1776. Part of the field gravelly, but not very wet, the reſt a good ſandy loam; the firſt fortnight in November, ploughed it on to the two-bout ridge, acroſs the uſual way of ploughing the field, and water-furrowed it thoroughly; April 4th, &c. drew thoſe ridges into balks, at one bout to each. The ninth, harrowed acroſs the balks, leaving the ſurface of the field ſmooth. The next day began the manuring, and finiſhed it the eighteenth; three hundred and ſeventy-three loads were carried to it. The nineteenth began to plough it into flat lands, the uſual way of ploughing the field, planting every other furrow in the manner deſcribed in the preceding experiment; and I found, on trial, that four women were juſt ſufficient to plant ſo as to keep one plough at work. Finiſhed the twenty-ſixth, harrowed and rolled the ſurface alternately, the weather being remarkably fine and dry, till it was very fine and ſmooth. Thus far I perſonally attended putting them in; but being abſent the whole ſummer, I muſt conſult the regiſter of the work done in my abſence, for the operations they had whilſt growing. I ordered them not to ſhim the ſurface as I had done the year before, leſt they ſhould time it wrong, or cut too deep; they were twice harrowed, once horſehoed with narrow ſhim, and once handweeded; the twenty-firſt of October, they began taking up, working every furrow, and finiſhed the fourteenth of November. I returned the twelfth. Produce, two thouſand one hundred and twelve buſhels; expence of taking up, eleven pounds five ſhillings and four-pence. The account returned to me was certainly accurate, from the above quantity of clean Potatoes, ariſing in the winter, correſponding with their groſs return of two thouſand four hundred and thirty, which is a ſeventh for dirt, as much as it would be in that field.

	Expences.	£.	s.	d.
1775.	Ploughing, 6s.	1	10	0
	Water furrowing	0	10	0
1776.	Balking, at 3s.	0	15	0
	Harrowing twice, 9d.	0	7	6
	Three hundred ſeventy-three loads of compoſt, 2s.	37	6	0
	Ploughing, 6s. -	1	10	0
	Cutting ſets and planting	0	16	0
	Harrowing four times, 9d.	0	15	0
	Rolling twice, 2d.	0	1	8
	Two hand-hoeings, 10s	2	10	0
	Horſe-hoeing with ſhim, 9d. - - -	0	3	9
	Hand-weeding, 3s.	0	15	0
	Taking up, &c.	11	5	4
	Annual expences, 11s. 8d.	2	18	4
	Value aſcertained	51	3	7

Not expecting to be able to be ſo much at my farm this winter as I afterwards was, I made no preparations for fattening Hogs; yet I never had, that article excepted, a more various experience of their importance. I began the winter with thirty-five ſtock Hogs, afterwards encreaſed to ſixty-three by Pigs. The Stores, the running ſtock of twenty-three, were ſupported in the farm-yard, in the manner before deſcribed; and I cannot but repeat once more, that keeping ſuch a number, with no other trouble than twice a day opening a barn door, throwing out four buſhels of Potatoes, two buſhels in the morning, and as much more in the evening, is ſuch a convenience, that thoſe who have not tried will ſcarcely believe it. This general application of the crop to lean Hogs, I have every reaſon to continue to value at nine-pence a buſhel.

December ſixteenth, &c. in order to ſee what quantity Hogs of different ſizes would conſume, as many as they would eat were given them; tried five of a ſize, from twenty-five pound to ſeventy pound alive, and they eat ſcarcely one buſhel a day: at the ſame time tried a very large Northamptonſhire Boar, and four Sows; they eat a buſhel and three quarters a day: thirteen Stores, from forty to eighty pound each, eat two buſhels a day. Theſe are very uſeful hints towards enabling a farmer to proportion his crop to his ſtock. They had no other food whatever; at the ſame time I found that one truſs of wheat ſtraw, forty pound, per diem, was ſufficient to litter thirty-five in their different ſtyes. They would have made more into dung; but this ſufficed to keep them clean and healthy for a winter of one hundred and eighty days; this is five loads. The quantity and goodneſs of the dung are well known.

Beſides Hogs, I met the winter with nine Cows, a Bull, and Heifers, beſides ſix yearling Calves; and I never was worſe provided with hay or ſtraw: if it had not been for my barn being full of Potatoes, the quantity of Hay I muſt have bought, would have been a heavy article. I put three of the Yearlings to Hay, and at the ſame time the three others to a very little Straw and Potatoes; it was not an experiment eaſily reduced to figures; but this I can ſay, that, valuing hay in the yard at two pounds two ſhillings a load, or a farthing a pound, the Potatoes the Calves eat at two-pence the half-peck, I thought equally paid by the Calves doing as well as on the Hay; though I ſhould remark that I have before this had yearling Calves that ſcoured much on them, and others that did not thrive. I don't mention the trial therefore as concluſive. The Cows had large quantities, and did very well: two Horſes that had been quite worked down, put to Hay and Potatoes November eighteenth, and had a buſhel a day between them; they throve very well, and ſoon recovered their looks: and I am convinced from this, as well as other trials, that they would prove a beneficial food; but much depends on their being waſhed perfectly clean. It will coſt two-pence a buſhel, for waſhing the cluſtered ſort clean enough for horſes: thoſe much cluſtered ſhould be thrown by for other uſes, as they will not waſh well.

Produce.	£.	s.	d.
Two thouſand one hundred and twelve buſhels, at 9d.	79	4	0
Expences — — —	61	3	7
Profit, 3: 12: 0 per acre	18	0	5

The reſult of this crop ſhews that the mode of planting I am now in is preferable to the old way of furrows: the produce is conſiderable; and the profit, after paying the manuring, muſt be eſteemed larger than can on ſuch land be had from any other fallow crop.

Reca-

Recapitulation of Value.	£.	s.	d.
By Experiment No. 4, fattening Hogs —	0	1	0
By ditto No. 5, ditto —	0	0	7½
By ditto No. 6 ditto —	0	0	9
By ditto No. 6, lean Hogs	0	0	9¼
By ditto No. 7, fattening Hogs — —	0	0	11½
By ditto No. 7, lean Hogs	0	0	9
By ditto No. 9, ditto	0	0	9
By ditto No. 9, Calves	0	0	8

Average, nine-pence farthing.

Rejecting the fraction, and calling the value at nine-pence, I am clear we ſhall not exceed, and that they who do not make that, muſt be bad managers at firſt, who will arrive at, and perhaps exceed it afterwards. Let me next conſider what crop it muſt be, to pay expences at the valuation. I will ſuppoſe the latter and beſt mode of culture, ten pound an acre for dung, and the land good enough to have the annual expences twenty ſhillings : mine are only eleven ſhillings and eight-pence, but then it is much below the ſtandard to be deſired for Potatoes. I will ſuppoſe the expences as follow :

	£.	s.	d.
Manure	10	0	0
One ploughing	0	6	0
* Ten buſhels Seed	0	10	0
Cutting and planting	0	3	6
Three harrowings	0	2	3
Rolling	0	0	2
Going over the ſurface with ſhim	0	2	0
Two hand-hoeings	0	10	0
Horſe-hoeing with ſhim	0	1	6
Hand-weeding	0	4	0
Taking up, &c.	2	5	0
Annual Expences	1	0	0
	15	4	5

Hence

---

* The trouble of picking over, and ſorting the Potatoes included, I think one ſhilling a buſhel a fair valuation. I always keep thoſe moſt cluſtered for ſeed.

Hence, therefore, we find that four hundred buſhels, at nine-pence, will juſt pay theſe expences, upon tolerable land, with ten pounds worth of manure. I think the Society will believe that there is hardly a doubt of receiving ſuch a produce: a much greater, I am confident, might be expected; but if the expence of ſo ameliorating a crop, the conſumption of which raiſes ſo much dung, were only paid, I believe there is no Farmer that would not think himſelf well off.

And here I cannot but call the Society's attention to the extreme inſignificance of the article rent, among the expences. I am clear there are ſoils let at twenty ſhillings an acre their value, which, without any manure at all, would give better crops than my eight ſhilling gravels would do with ſuch manurings as I have deſcribed: for all the branches therefore of elaborate cultivation, a Renter ſhould ſeek for the beſt natural ſoil; one may almoſt aſſert that he cannot pay too dear for it, ſince, if he attempts by manuring to make a poor ſoil equal to it, he will find the expence enormous, and almoſt endleſs. There are vaſt tracts in England of dry, ſound, mellow, friable loams, at twenty ſhillings an acre, landlord's rent, which, with only common management, yield large crops of Turneps, ſix quarters of Barley, ſeven of Oats, and four of Wheat: theſe are products which forty ſhillings per acre per annum, expended on my wet gravels, would never make them equal to. Thoſe are the ſoils upon which this Potatoe culture would make a figure.

Recapitulation of Profit and Loſs.

	£.	s.	d.
Experiment No. 2, Profit per acre — —	3	19	2
No. 4, ditto —	0	0	8
No. 5, ditto — —	0	1	10
No. 8, ditto —	7	6	8
No. 9, ditto —	3	12	0
No. 6, Loſs per acre	2	19	9
No. 7, ditto —	4	2	9

COURSE

COURSE OF CROPS IN WHICH IT IS ADVANTAGEOUS TO INTRODUCE THE HOWARD POTATOE.

The two experiments upon which I chiefly found what I have to obſerve under this head, are the fifth and the ſixth in the preceding account; as in thoſe I truſted to the Potatoe crops as a fallow, previous to laying down to meadow, which demands as clean and careful a fallow as any object poſſibly can. After the crops of thoſe fields were taken up, the land was well water-furrowed, and repeated tillage given in the ſpring for Barley, with which, on the four acres of experiment No 5, were ſown,

Forty pounds of White Clover,
Forty pounds of Rib Graſs,
Thirty-five pounds of Cow Graſs,
Five pounds of Marle Graſs,
Five pounds of Common Rep Clover.

The Marle and Common Red were on lands by themſelves, for experiment: the Barley yielded five quarters an acre. The above ſeeds took perfectly well, and made a clean, and, for the ſoil, valuable meadow. After Potatoes on the ſix acres of experiment No. 6, Barley was alſo ſown, except half an acre, which had a buſhel of Ducket's Spring Wheat: the Barley yielded four quarters and a half an acre; the Wheat was ſcarce worth reaping; with them the following ſeeds:

One hundred pounds of Rib Graſs,
Seventy pounds of Cow Graſs,
Sixty pounds of Yellow Trefoil,
Twelve pounds of White Clover.

The three firſt equally over the whole field, the laſt only over two acres of it, to ſee the difference: the whole field formed, for the country, a very clean good meadow, anſwering to my wiſh. I may therefore aſſert the fallow of this Potatoe equal to the preparation for meadow.

But for a common courſe of crops, I ſhould recommend Wheat to follow Potatoes: herein however, as far as the preceding trials extend, I ſpeak from theory, for none of them were followed by that grain; but from attending particularly to the ſtate in which theſe crops left the ſoil, as well as from other trials, I am induced to think that the proper management in this caſe, the Wheat ſhould be ſown as the plough goes upon the land turned by the plough, not in the furrow or path of it, before the men break it with their three-pronged forks. In taking up my crop, that operation covers the Wheat effectually without burying it too deep, and leaves it admirably put in. The following is the ſucceſſion of crops I recommend on this plan.

Firſt, Potatoes.
Second, Wheat.
Third, Turneps.
Fourth, Barley.
Fifth, Clover.
Sixth, Wheat.

All the dung beſtowed in the ſix years to be laid on for the Potatoes; and this courſe, I am inclined to think, take it for all in all, is the beſt and moſt profitable that can be practiſed on all ſoils that will do for thoſe two roots, and for theſe reaſons.

One third of the arable land is every year in Wheat, which is as much as poſſibly can be ſown in any profitable courſe. It contains ſpring corn, the ſtraw of which is neceſſary for Cattle; the Turneps do for the ſheep of the farm; and the Clover will feed in ſummer the ſtock Hogs, ſupported in winter by the Potatoes: with this great advantage, the two crops of Wheat are put in at ſcarce any expence; one ploughing of the Clover land; no other expence on Potatoes than mere ſowing, ſince all the reſt is done in order to take up that crop. The only apparent objection is this, that you chooſe the dryeſt ſeaſon to take up the Potatoes, but a wet one to put in

Wheat: on ſoils ſo very dry that rains are neceſſary for the Wheat ſowing, the land muſt be left, and the ſeed harrowed in; but on the dryeſt lands I have farmed, no rain is wanted to put in Potatoes. The practiſe alſo of ſowing Wheat in the wet is often carried much too far; upon the whole, I venture to recommend this courſe as one which includes on a farm every circumſtance that is eſſential. The Norfolk huſbandry of firſt Turneps, ſecond Barley, third Clover, fourth Wheat, is excellent; but it has this great objection, that the ſmall value of the Turneps will not pay for manuring; and I conſider it eſſential to a courſe, that the fallow crop ſhould pay its own expence, including manure.

I am ſenſible the preceding experiments are very incomplete, and my knowledge of it prevented my ſending the account to the Society in 1777. I meditated farther trials, in a ſituation that would permit me to diſcover the effect of the cultivation here recommended, upon a very good dry loam; but being repeatedly diſappointed in that expectation, I think it better to venture to the Society's examination, without longer waiting for uncertain circumſtances. If this firſt opening of my practice on the Potatoe ſhould inſtigate others to make experiments, who are better able to puſh the culture vigorouſly, I may then be the means of ſerving the public, though ſlightly.

The ingenious Author of the foregoing Obſervations on the Howard or Cluſtered Potatoe, has communicated to the Society an account of his further Experiments on the uſes of that root, continued to the year 1784; which are intended to make part of a future volume of the Tranſactions of this Society.